

1. An idler pulley with an integral bearing carrier insert comprising:
a pulley body having a peripheral surface for accepting and retaining an endless belt; and
a tubular bearing carrier insert for housing a bearing, said insert forming a central hub
along a perpendicular axis of said idler pulley body, said hub having an inner circumferential surface and
an outer circumferential surface.
2. The idler pulley of claim 1 wherein said idler pulley body is manufactured from a moldable
polymeric material.
3. The idler pulley of claim 2 wherein said moldable polymeric material is a polyamide, phenolic
resin, epoxy resin, polyester, polyurethane, high density polyolefin, or a blend thereof.
4. The idler pulley of claim 3 wherein said polymeric material is a polyamide or a polyphthalamide.
5. The idler pulley of claim 4 wherein said polymeric material is a polyamide.
6. The idler pulley of claim 4 wherein said polyamide is a nylon selected from the group consisting of
nylon-6; nylon 6,6; nylon 4,6; nylon 6,10; nylon 9; nylon 11; or nylon 12.
7. The idler pulley of claim 6 wherein said nylon is nylon 6, nylon 6,6 or nylon 4,6.
8. The idler pulley of claim 2 wherein said moldable material further includes at least one of a
modifier, a filler, a reinforcing agent and an adhesion promoter.
9. The idler pulley of claim 8 wherein said at least one of a modifier, a filler, a reinforcing agent and
an adhesion promoter is a modifier selected from the group consisting of polytetrafluoroethylene, ultra
high molecular weight polyethylene, silicone, molybdenum disulfide, graphite and rubber.
10. The idler pulley of claim 8 wherein said at least one of a modifier, a filler, a reinforcing agent and
an adhesion promoter is a filler selected from the group consisting of glass beads, carbon black, calcium
carbonate, wollastonite, mica, clay and talc.
11. The idler pulley of claim 8 wherein said at least one of a modifier, a filler, a reinforcing agent and
an adhesion promoter is a reinforcing agent selected from the group consisting of glass fiber, long glass
fiber, aramid fiber, steel fiber and carbon fiber.
12. The idler pulley of claim 8 wherein said at least one of a modifier, a filler, a reinforcing agent and
an adhesion promoter is an adhesion promoter selected from the group consisting of sulfur, silica,
acrylates, vinyl acetates and low molecular weight polyamides.
13. The idler pulley of claim 2 wherein said outer circumferential surface of said pulley body is coated
with a metallic coating.
14. The idler pulley of claim 13 wherein said metal coating is steel or aluminum.
15. The idler pulley of claim 1 wherein said tubular bearing carrier insert is manufactured from a
metal material.
16. The idler pulley of claim 15 wherein said tubular bearing carrier insert is manufactured
from a metal selected from the group consisting of steel, aluminum, zinc, brass or a combination thereof.

17. The idler pulley of claim 16 wherein said tubular bearing carrier insert is manufactured from steel.
18. The idler pulley of claim 17 wherein said steel tubular bearing carrier insert is coated with zinc or brass.
19. The idler pulley of claim 1 further including a bearing member having an outer bearing race surface fitted within said central hub such that said outer race surface of said bearing member is circumferentially adjacent the inner circumferential surface of said hub.
20. The idler pulley of claim 19 wherein said central hub includes locating means for locating said bearing member during assembly.
21. The idler pulley of claim 20 wherein said locating means is one of a stepped profile or detents.
22. The idler pulley of claim 1 wherein said outer circumferential surface of said tubular shell member further includes means to enhance interlocking between said tubular shell insert and said pulley main body.
23. An idler pulley assembly with an integral bearing carrier insert comprising:
- a moldable polymeric pulley body having an outer circumferential surface for accepting and retaining an endless belt;
 - a tubular metal or ceramic bearing carrier insert forming a central hub along a perpendicular axis of said pulley body, said hub having an outer circumferential surface shaped to enhance interlocking between said bearing insert and said moldable polymeric pulley body, and having an inner circumferential surface provided with one or more bearing member locating means selected from the group consisting of stepped profile and detents; and
 - a bearing member having an outer bearing race surface, said bearing member fitted within said hub such that said outer race surface of said bearing member is circumferentially adjacent the inner circumferential surface of said hub.
24. A method for manufacturing a moldable polymeric idler pulley having an integrally formed metal or ceramic bearing insert comprising the steps of:
- (a) providing a mold having a cavity, the inner surface of said cavity being shaped to form an outer surface of a pulley body having a desired configuration and dimension;
 - (b) inserting a tubular metal bearing carrier insert having an outer circumferential surface and an inner circumferential surface defining an open interior space for accepting a bearing member, within said cavity, said insert configured to provide a hub along a perpendicular axis of a pulley body formed in said mold, said outer circumferential surface of said insert having an outer surface shaped to enhance interlocking between said hub and said pulley body and said hub further including a stepped profile or detents to locate said bearing member;
 - (c) closing said mold;
 - (d) introducing a free-flowing moldable polymeric material into said cavity such that said free-flowing moldable polymeric material fills said cavity around said outer circumferential surface of

said insert leaving said open interior space of said insert free of said free-flowing moldable polymeric material;

(e) subjecting said mold containing said free-flowing material and said tubular metal bearing carrier insert to conditions of heat and pressure to form an idler pulley with an integral bearing carrier insert;

(f) cooling said mold to provide a molded idler pulley with integral bearing carrier insert formed along a perpendicular axis of said idler pulley body;

(g) opening said mold; and

(h) recovering said molded idler pulley with integral bearing carrier insert.

25. The method of claim 24 wherein step (b) further includes inserting a bearing member in said open interior space.

26. The method of claim 2 further including step (i) inserting a bearing member into said open interior space.